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read by a beginner, and Cremona, as translated by Leudesdorf, seems rather unattractive, and certainly lacks the charm of Reye's lucid style.

It seems to us, therefore, that the translator has rendered a great service to English-speaking students in translating this first part of Reye, and we earnestly hope that sufficient interest in the study of pure geometry will be awakened by having this very attractive book available for beginners, to make him feel that his unselfish labor has not been in vain.

Whether it is worth while to translate the other parts also (Parts II. and III. carry the subject far beyond its elements) is, however, very questionable—because those of our students who are sufficiently advanced to understand the subjects treated are able to read the German about as readily as the English.

The translation itself is also, as a whole, to be heartily commended; the charm of the original has been preserved, many valuable exercises have been added, and the breaking up of the lectures into numbered paragraphs, as well as the rearrangement of the exercises so as to have those that are appropriate thereto follow each lecture, are distinct improvements.

It is, however, to be greatly regretted that the translator has seen fit to change a well-established and everywhere understood terminology. For example, he replaces the terms *pencil* and *sheaf* (which are already, and for many years have been, well-nigh universally employed to represent particular geometric concepts), respectively by the terms *sheaf* and *bundle*. While it may be granted that these new terms are in themselves just as good as, and possibly even a trifle better than, those for which they are substituted, yet nothing of importance is gained by the change, while the danger of confusion and misunderstanding is greatly increased.

J. H. TANNER.

CORNELL UNIVERSITY, October 4, 1899.

#### BOOKS RECEIVED.

*Bacteria.* GEORGE NEWMAN. New York, G. P. Putnam's Sons. London, John Murray. 1899. Pp. xiv + 348.

*Cambridge Natural History.* Vol. V. *Insects.* Part II. DAVID SHARP. London and New York, The Macmillan Company. 1899. Pp. xii + 626.

*A Dictionary of Birds.* ALFRED NEWTON, assisted by HANS GADOW. New York, The Macmillan Company. London, Adams & Charles Black. 1893-1896. Cheap issue, unabridged. Pp. iii + 1088. \$5.00.

*The Insect World. A Reading Book of Entomology.* CLARENCE MOORES WEED. New York, D. Appleton and Company. 1899. Pp. xvi + 210.

*Indicators and Test-Papers.* ALFRED I. COHN. New York, John Wiley & Sons. London, Chapman & Hall, Ltd. 1899. Pp. ix + 249.

*A System of Medicine by] Many Writers.* Vol. VIII. *Diseases of the Nervous System.* Continued. Edited by THOMAS CLIFFORD ALLBUTT. New York and London, The Macmillan Company. 1899. Pp. xii + 937. \$5.00.

#### SCIENTIFIC JOURNALS AND ARTICLES.

*The Journal of Physical Chemistry*, October, 'On the Paraanisaldoximes,' by H. R. Carveth: a study of the two modifications; 'On the Relation between Pressure and Evaporation,' by Edwin H. Hall; 'The Electrical Conductivity of Non-Aqueous Solutions,' by Azariah T. Lincoln: an account of the experimental work of the author, chiefly with chlorides (also silver and lead nitrates, silver and mercuric cyanids, mercuric iodid and copper sulfate), in a well-selected variety (27) of solvents, all organic except  $PCl_3$  and  $SuCl_4$ . Some substances were insoluble, some insoluble but not conductors of electricity, while others conducted electricity well. Two conclusions of the author may be quoted: "The data collected are as yet insufficient to show what the relation between solvent and dissolved substance must be in order to yield solutions that conduct electricity." "The dissociation theory as promulgated for the explanation of the electrical conductivity of aqueous solutions, apparently cannot be applied in its present form to explain the conductivity in non-aqueous solutions." The article is an important contribution to the study of solutions.

J. L. H.

#### SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES. SECTION OF BIOLOGY.

THE regular meeting of the Section of Biology was held on Monday evening, October 9th, Professor Frederic S. Lee presiding. The

minutes of the previous meeting were read and approved. The following persons were nominated for membership in the Academy: Mr. Maurice A. Bigelow, of Teachers College; Dr. Edward L. Thorndike, of Teachers College, Mr. R. S. Woodworth, of University and Bellevue Hospital Medical College, and Dr. W. Golden Mortimer, 504 W. 146th Street, New York City.

The evening was devoted to reports of the past summer's work by a number of members.

Professor H. F. Osborn gave an account of the exploration by the American Museum party in the Como beds of Southern Wyoming, and of further work in the Bone Cabin Quarry, which resulted in the discovery of a large number of the remains of Dinosaurs. Four miles distant a *Brontosaurus* skeleton was found. Parties were also sent to the Freeze Out Mountains and north to the Rattlesnake Mountains, but without success.

Professor E. B. Wilson reported upon his search in Egypt for *Polypterus*, which resulted in the obtaining of a few fine females, but with unripe ovaries; this was in winter, between Assuan and Mansourah. Professor Wilson reported, also, the rediscovery by him of the gill-bearing earthworm, *Alma*.

Professor Bashford Dean reported on the work of the second Senff expedition to the Nile, and spoke of the death of Nathan Russell Harrington, the senior member of the party. Mr. Harrington had for four years identified himself with the Biological Section, and had left with it an enviable example of energetic and persistent effort to complete an important research and of sacrifice and devotion to a life work.

Professor Dean further reported on his work on the California coast while a guest of Stanford University. He was successful during the present summer in obtaining a number of freshly hatched young of *Bdellostoma*, and many developmental stages of *Chimæra Collie*.

Dr. G. N. Calkins reported the passing of a successful summer at the Marine Biological Laboratory at Woods Hole, where he was at work upon the Protozoa.

Professor F. E. Lloyd gave a brief account of a collecting trip in Vermont, embodying some remarks upon certain species of *Lycopodium* found there. He also reported upon the marked

success of the Biological Laboratory at Cold Spring Harbor during the summer.

Professor F. S. Lee spoke on the continuation of his experimental work upon the lateral line in fishes, conducted at Woods Hole.

FRANCIS E. LLOYD,  
*Secretary.*

#### DISCUSSION AND CORRESPONDENCE.

##### 'THE PERCEPTION OF HORIZONTAL AND OF VERTICAL LINES.'

TO THE EDITOR OF SCIENCE: In connection with Professor Peirce's article on 'The Perception of Horizontal and of Vertical Lines' (SCIENCE, September 29, 1899), it may be appropriate to call attention to a study of the same question made in the Psychological Laboratory of the University of Wisconsin and published in the *American Journal of Psychology* in 1893 (Vol. V., pp. 214-223). Our method consisted in seating the observer under a parasol-like canopy, which completely screened from him all the horizontals and verticals of floor and walls; in then placing opposite him under the canopy a large black disc, upon which was centered a smaller white disc bearing upon it a single line; and in requiring the observer to set this line (by means of strings manipulated by his hands which were outside the canopy) so that it appeared horizontal or vertical. The observer is thus everywhere surrounded by curved outlines, and has no standard to guide him except the ideal one which he carries in his mind. So far as the results of the two investigations are comparable they agree very well, both emphasizing the great accuracy of such 'mental' judgments. Our estimations were made binocularly under circumstances approximating those of the ordinary use of the eyes; Professor Peirce's subjects in the first group of experiments used each eye separately. If we may assume that the average setting of the two eyes used separately is equivalent to the binocular setting of the lines, and further allow that the two methods used are fairly comparable, we find for the mean deviation for Professor Peirce's subjects (average of ten subjects) for the horizontal  $+.25^\circ$ , for my ten subjects  $+.12^\circ$ ; for the vertical  $-.39^\circ$  and  $+.23^\circ$ . It is better, however, to compare my results with Professor